

INCH-POUND
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MIL-PRF-372E  
W/AMENDMENT 2  
17 January 2014  

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SUPERSEDING  
MIL-PRF-372E  
W/AMENDMENT 1  
23 November 2013

## PERFORMANCE SPECIFICATION

### CLEANING COMPOUND, SOLVENT (FOR BORE OF WEAPONS)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification describes the performance requirements and verification methods for a type of solvent cleaning compound, also known as rifle bore cleaner (RBC), for use in removal of copper fouling and firing residue in the bore of weapons. This product is for use in cleaning caliber military weapons, operating in the temperature range of 0 to + 43 °C (+32 to +110 °F). (See 6.1).

#### 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 or 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 or 4 of this specification, whether or not they are listed.

Comments, suggestions or questions on this document should be addressed to: Commander, U S Army Armament Research, Development, and Engineering Center (ARDEC), ATTN: RDAR-QES-E, Picatinny Arsenal, NJ 07806-5000, or emailed to <a href="mailto:usarmy.picatinny.ardec.list.ardec-stdzn-branch@mail.mil">usarmy.picatinny.ardec.list.ardec-stdzn-branch@mail.mil</a> . Since contact information can change, you may want to verify the currency of this address using the ASSIST Online database at <a href="https://assist.dla.mil">https://assist.dla.mil</a> .
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AMSC/NA

FSC 6850

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2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

## FEDERAL SPECIFICATIONS

O-M-232                      Methanol (Methyl Alcohol)

## FEDERAL STANDARDS

FED-STD-791                Testing Method of Lubricants, Liquid Fuels, and Related Products

## DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-680                Degreasing Solvent.  
 MIL-DTL-51408            Paper, Chemical Agent Detector, VGH, ABC-M8 Deleted.  
 MIL-DTL-51518            Paper, Chemical Agent Detector: M9 (SR119 DYE). Deleted.

(Copies of these documents are available online at <http://quicksearch.dla.mil/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

## ASTM INTERNATIONAL

ASTM A109/A109M    Standard Specification for Steel, Strip, Carbon, (0.25 Maximum Percent), Cold-Rolled  
 ASTM B16/B16M      Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines  
 ASTM B36/B36M      Standard Specification for Brass Plate, Sheet, Strip, And Rolled Bar  
 ASTM B117            Standard Practice for Operating Salt Spray (Fog) Apparatus  
 ASTM B152/B152M    Standard Specification for Copper Sheet, Strip, Plate and Rolled Bar  
 ASTM B209            Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate  
 ASTM D56             Standard Test Method for Flash Point by Tag Closed Cup Tester  
 ASTM D92             Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester  
 ASTM D97             Standard Test Method for Pour Point of Petroleum Products

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ASTM D972	Standard Test Method for Evaporation Loss of Lubricating Greases and Oils
ASTM D1743	Standard Test Method for Determining Corrosion Preventive Properties of Lubricating Greases
ASTM D1748	Standard Test Method for Rust Protection by Metal Preservatives in the Humidity Cabinet
ASTM D4057	Standard Practice for Manual Sampling of Petroleum and Petroleum Products
ASTM D4177	Standard Practice for Automatic Sampling of Petroleum and Petroleum Products
ASTM D6779	Standard Classification System for and Basis of Specification for Polyamide Molding and Extrusion Materials (PA)

(Copies of this document are available from <http://www.astm.org> or ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 Qualification. RBC furnished under this specification shall be products authorized by the Qualifying Activity for listing on the applicable Qualified Products List (QPL) before contract award (see 4.1.1, 6.3).

3.1.1 Conformance inspection. A sample of RBC shall be subjected to a qualification conformance inspection (See 6.3.1).

#### 3.2 Support and ownership requirements.

3.2.1 Graphite. RBC shall contain no graphite or powdered metals.

3.2.2 Ozone depleting substances (ODSs). RBC shall contain no ODSs.

3.2.3 Toxicity and hazardous materials. RBC shall have no adverse effect on the health of personnel when used for its intended purpose.

3.2.4 Color and appearance. RBC shall be uniform in color and appearance when examined in reflected light after shaking to disperse residue.

3.2.5 Physical properties. RBC shall conform to properties specified in TABLE I.

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TABLE I. Physical Properties

Properties	Limits
Flash Point, min	43 °C (110 °F)
Pour Point, max	0 °C (32 °F)

3.3 Interface requirements.

3.3.1 Interference with chemical agent detector paper. Deleted.

3.3.2 Allowable weight change.

3.3.2.1 Aluminum submersion. The RBC shall not cause an average weight change in excess of 0.1 milligrams per squared centimeter ( $\text{mg}/\text{cm}^2$ ) of aluminum on three panels when each is submersed for 8 hours.

3.3.2.2 Steel submersion. The RBC shall not cause an average weight change in excess of 0.1  $\text{mg}/\text{cm}^2$  of steel on three panels when each is submersed for 8 hours.

3.3.2.3 Brass submersion. The RBC shall remove an average of 0.15  $\text{mg}/\text{cm}^2$  of copper on three panels when each is submersed for 8 hours.

3.3.3 Plastic submersion. The RBC shall not cause an average weight change in excess of 1.5  $\text{mg}/\text{cm}^2$ , nor shall the RBC cause an average dimension change excessive of 15% on three panels when each is submersed for 8 hours.

3.4 Environmental requirements.

3.4.1 Humidity resistance. Deleted.

3.4.2 Salt-spray resistance. RBC, applied to three test panels, shall protect the panels so that the corrosion dots do not exceed the corrosion of an untreated control panel in size and number after 1 hour of exposure to a spray of 5 % salt solution.

3.4.3 Water displacement and water stability. RBC, applied to three test panels, shall displace water so that there is no evidence of rust spots, staining or pitting due to corrosion on the test panels after storage in the static humidity chamber for 1 hour.

3.5 Operating requirements.

3.5.1 Firing residue removal. RBC shall provide cleaning capability to remove a minimum average of 95% of the residue generated from the ignition of WC 844 propellant.

3.5.2 Stability.

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3.5.2.1 Freezing. The RBC shall show no separation after storage throughout a temperature range of -54°C (-65°F) to 25°C (77°F).

3.5.2.2 Heating. The RBC shall show no separation after storage at 66°C (150°F).

3.5.3 Copper removal.

3.5.3.1 Abrasive cleaning. The RBC shall remove an average of 0.10 mg/cm<sup>2</sup> of copper on three panels when each is abrasively cleaned for 120 seconds.

#### 4. VERIFICATION

TABLE II. Requirement/verification cross-reference matrix.

Property	Requirement	Verification	Classification of Inspections	
			Qualification Testing	Conformance Inspection
Qualification	3.1	4.1.1	X	
Conformance inspection	3.1.1	4.1.2		X
Graphite	3.2.1	4.2.1	X	X
ODSs	3.2.2	4.2.2	X	X
Toxicity and hazardous materials	3.2.3	4.2.3	X	X
Color and appearance	3.2.4	4.2.4	X	X
Flash Point	3.2.5	4.2.5	X	X
Pour Point	3.2.5	4.2.5	X	X
Chemical Agent Detector Paper - Deleted	3.3.1	4.3.1		
Aluminum Submersion	3.3.2.1	4.3.2	X	X
Steel Submersion	3.3.2.2	4.3.2	X	X
Brass Submersion	3.3.2.3	4.3.2	X	X
Plastic Submersion	3.3.3	4.3.3	X	X
Humidity Resistance - Deleted	3.4.1	4.4.1		
Salt-spray Resistance	3.4.2	4.4.2	X	X
Water Displacement/Stability	3.4.3	4.4.3	X	X
Firing Residue Removal	3.5.1	4.5.1	X	X
Freezing	3.5.2.1	4.5.2.1	X	X
Heating	3.5.2.2	4.5.2.2	X	X
Abrasive Cleaning	3.5.3.1	4.5.3	X	X

#### 4.1 Classification of inspection.

4.1.1 Qualification inspection. Upon formal application, XRBC qualification inspection shall consist of the specified tests for all requirements specified in Section 3, (See Table II).

4.1.1.1 Qualification samples. Qualification testing shall require two gallons of the candidate XRBC product. If the final formulation contains solid materials, a one-half gallon sample shall be provided identical to the final product but without the addition of solid materials.

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4.1.1.2 Qualification rejection. If a product sample fails to meet any of the requirements specified in Section 3, that product shall not be qualified, and shall not be listed in the QPL.

4.1.2 Conformance inspection. Conformance inspection of production lots (See 6.3.1), shall consist of the specified tests for all the requirements specified in Section 3 (See Table II.)

4.1.2.1 Rejection of lots. If a product sample fails to pass any of the specified tests, the production lot represented by that sample, shall be rejected.

4.1.3 Sampling for tests. Samples for tests shall be taken in accordance with ASTM D4057 or ASTM D4177, as applicable.

#### 4.2 Support and ownership verifications.

4.2.1 Graphite. Objective evidence shall be examined to verify the product formulation contains no graphite or powdered metals. (See 6.3.2)

4.2.2 Ozone depleting substances. Objective evidence shall be examined to verify the product formulation contains no ODSs. (See 6.3.2)

4.2.3 Toxicity and hazardous materials. A Toxicity Clearance by the US Army Public Health Command (USAPHC) shall confirm conformance. (See 6.4).

4.2.4 Color and appearance. A 4 oz translucent container of product shall be shaken for a period not to exceed 30 seconds to disperse any visible residue. Immediately after shaking, the product shall be visually inspected to check for full dispersion of residue. Failure of residue to fully disperse after shaking or failure of the product to achieve a uniform color shall be cause for failure of product qualification.

4.2.5 Physical properties. Physical properties shall be verified by methods identified in TABLE III.

TABLE III. Test methods.

Properties	Method
Flash Point	ASTM D56 <u>1/</u>
Pour Point	ASTM D97
<u>1/</u> If the flash point is over 79 °C (175 °F), use the Cleveland Open Cup Method, ASTM D92.	

#### 4.3 Interface verifications.

4.3.1 Interference with chemical agent detector paper. Deleted.

4.3.2 Allowable weight change.

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TABLE IV. Coupons for allowable weight change.

Metal	Specification
Aluminum	ASTM B209
Steel	ASTM A109/A109M
Copper Alloy	CC22000 ASTM B36

4.3.2.1 Preparation of test coupons. Three test coupons 1 in x 1 in x 1/32 in shall then be cleaned by swabbing with hot heptane with a final rinse in warm anhydrous methanol conforming to Grade A of O-M-232. The test coupons shall be held in a manner to avoid contact with the operator's hands.

4.3.2.2 Exposure of test coupons. After weighing, place the test coupons in a container positioned along the circumference so that there is an approximately equal spacing between each. The test coupons shall be covered with enough of the product supplied, containing no solid particles, so that the tops of the coupons are at least 6 mm below the surface of the product. Maintain jar at  $24^{\circ}\text{C} \pm 3^{\circ}\text{C}$  ( $75^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ) for a period of 8 hours  $\pm$  15 minutes.

4.3.2.3 Examination of test coupons. Upon completion of the test, remove the RBC and any loose corrosion products from the specimen by swabbing with surgical gauze pads moistened with heptane, then with methanol, and follow by a rinse with clean methanol. Visually examine and re-weigh the specimens and calculate the weight loss or gain in milligrams per square centimeter.

#### 4.3.3 Plastic submersion.

4.3.3.1 Exposure of plastic tests coupons. Plastic nylon 1 in x 1 in x 1/32 in, ASTM D 6779 0161 or 0162, test coupons will be weighed and the length, width, and thickness will be recorded. Place the test coupons in a container positioned along the circumference so that there is an approximately equal spacing between each. The test coupons shall be covered with enough of the product supplied, containing no solid particles, so that the tops of the coupons are at least 6 mm below the surface of the product. Maintain jar at  $24^{\circ}\text{C} \pm 3^{\circ}\text{C}$  ( $75^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ) for a period of 8 hours  $\pm$  15 minutes.

4.3.3.2 Examination of plastic coupons. Upon completion of the test, remove the RBC and any loose corrosion products from the specimen by swabbing with surgical gauze pads. Visually examine and re-weigh the specimens and calculate the weight loss or gain in milligrams per square centimeter. Re-measure the dimension and calculate the dimension change.

#### 4.4 Environmental verifications.

4.4.1 Humidity resistance. Deleted.

4.4.2 Salt-spray (5 % solution) resistance.

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4.4.2.1 Test panels and preparation. Three test panels conforming to Annex A1.10, “Humidity Cabinet Apparatus - Steel Panels,” of ASTM D1748 shall be used. The panels shall be cleaned and sandblasted in accordance with FED-STD-791, Method 5329, except that 120 grit white aluminum oxide shall be used in place of silica sand.

4.4.2.2 Panel edge dressing. Panel edges shall be examined closely, and sanded if necessary, to insure panel edges are fully rounded so as not to promote corrosion initiating at a sharp edge. No additional protective substance (e.g. wax or asphalt) shall be applied to the panel edges to inhibit corrosion.

4.4.2.3 Salt-spray test. The salt-spray resistance test shall be performed in accordance with ASTM B117 except that the panels shall be placed at an angle of 10-20° from the vertical with the four inch edge with drilled holes facing down in the cabinet during exposure to salt-spray.

4.4.2.4 Salt-spray failure criteria. Visually examine the test panels after exposure. Corrosion on the outer ¼ inch (6.4 mm) of the panels shall not be cause for rejection.

4.4.3 Water displacement and water stability. Conduct the water displacement and water stability test in accordance with Method 3007 of FED-STD-791, except that the test shall be made only on the compound-water mixture.

#### 4.5 Operating verifications.

4.5.1 Firing residue removal. Clean porcelain evaporating dish (round bottom type) of approximately 102 mm in diameter with acetone, heptane, soap, and water on the inside and outside. Weigh 5.00 + 0.03 grams of WC 844 propellant powder into dish and spread it around evenly without jarring with the bottom of a 10 mL glass test tube. Ignite the propellant in the center of the dish with an extended reach lighter and burn until all visible propellant is consumed. Allow dish to cool for 10 minutes. The first run of a brand new dish is discarded.

4.5.1.1 Dish preparation. Invert the dish, rap it sharply several times against the table top and then blow it out with a 15 psi stream of filtered air, to remove any non-adhering residue. The dish shall be held approximately 15 cm from the end of the air hose. Weigh the dish with the adhering residue, and subtract the weight of the evaporating dish (empty) to determine the weight of propellant residue adhering to the dish ( $W_1$ ).

4.5.1.2 Cleaning process. Add enough of the RBC product to cover the burned surface, cover with a watch glass, and permit it to soak for  $45 \pm 3$  min, at  $54 \pm 1$  °C ( $129 \pm 2$  °F) in convection oven. Remove the dish and immediately swab the residue with a double layer of cotton gauze pad (Webril® Handi-Pad or equivalent) wrapped around the wide end of a CoorsTek® 60323 porcelain pestle, weighing approximately 470 grams and measuring approximately 190 mm high by 57 mm at its widest point. Excess RBC may be removed, but the pad must remain wet. Swab the dish in both a circular and back and forth motion for a period of 90 seconds, letting the weight of the pestle perform the actual removal of the residue. Do not apply any downward force to the pestle.



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4.5.1.3 Calculation of residue removed. After swabbing, decant the remaining oil and thoroughly wash the inside of the dish with 75 ml of heptane. Note if the candidate does not dissolve in heptanes as another solvent may be approved by the preparing activity in these cases. Clean the outside of the dish with heptane. Heat the evaporating dish to  $55 \pm 1^\circ \text{C}$  ( $131 \pm 2^\circ \text{F}$ ) for  $30 \pm 2$  minutes, cool to room temperature and weigh the dish with the remaining residue. Subtract the weight of the evaporating dish (empty) to determine the weight of propellant residue still adhering to the dish after the cleaning cycle ( $W_2$ ). Calculate the percent residue removed by the equation:

$$\% \text{ residue removed} = 100 \times \frac{W_1 - W_2}{W_1}$$

4.5.1.4 Firing residue removal failure criteria. If the average residue removal of three test iterations is less than ninety five percent (95 %), the product shall fail to qualify.

#### 4.5.2 Stability.

4.5.2.1 Freezing. A sample of the cleaner shall be placed in a pour point tube, stoppered, and subjected to  $-54^\circ \text{C} \pm 3^\circ \text{C}$  ( $-65 \pm 5^\circ \text{F}$ ) for 16 hours followed by 8 hours at  $25 \pm 3^\circ \text{C}$  ( $77 \pm 5^\circ \text{F}$ ). This cycle shall be repeated for a total of three times. Following this procedure the sample shall be inverted once, permitted to stand at  $25 \pm 3^\circ \text{C}$  ( $77 \pm 5^\circ \text{F}$ ) for 16 hours, and then examined for separation. Any evidence of separation in this sample shall be cause for rejection.

4.5.2.2 Heating. A sample of the cleaner shall be placed in a pour point tube, loosely stoppered, and subjected to  $66^\circ \text{C}$  ( $150^\circ \text{F}$ ) for 30 minutes. Upon completion of the heating period, the sample is permitted to cool to  $25 \pm 3^\circ \text{C}$  ( $77 \pm 5^\circ \text{F}$ ) and examined for separation. Any evidence of separation in the sample shall be cause for rejection.

#### 4.5.3 Abrasive cleaning.

TABLE V. Coupons for copper removal.

Metal	Specification
Copper Alloy (UNS No. C22000)	ASTM B36/B36M

4.5.3.1 Preparation of test coupons. Three test coupons 1.5 in x 1.5 in x 1/16 in, shall then be cleaned by swabbing with hot heptane with a final rinse in warm anhydrous methanol conforming to Grade A of O-M-232. The test coupons shall be held in a manner to avoid contact with the operator's hands.

4.5.3.2 Exposure of test coupons. After weighing, affix the test metal coupon to a rubber suction cup. Cut 4 layers of gauze pad adequate to cover the metal test coupon. With an eyedropper, coat the gauze pad with sufficient cleaner to ensure the entire padding is saturated. Bring the dead weight of the spindle down and establish contact with the center of the gauze pad atop the entire test metal coupon. Using the ASTM D1743 apparatus modified with a 200 gram

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dead weight flat spindle, apply a constant downward force and rotation. Run spindle for 120 seconds. Note: the rotation of the spindle is 1725 rpm. The equipment used in the alternate corrosion test procedure in ASTM D1743 method is unacceptable.

4.5.3.5 Examination of test coupons. Upon completion of the test, remove the RBC and any loose corrosion products from the specimen by swabbing with surgical gauze pads moistened with heptane, then with methanol, and follow by a rinse with clean methanol. Visually examine and re-weigh the specimens and calculate the weight loss or gain in milligrams per square centimeter.

## 5. PACKAGING

5.1 Packaging For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of material is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. RBC covered by this specification is a highly penetrating, mobile liquid and is intended for field application to satisfy the complete need of cleaning of military weapons. RBC facilitates the effective removal of copper, firing residues, gums and other contaminants from weapon components.

6.1.1 Ventilation requirements. Due to the solvent systems often employed in RBC type formulations, field users should avoid using RBC in conditions of limited ventilation, that is, closed rooms, sealed vehicles, etc.

6.1.2 Preservative application limitation. RBC is not intended for storage and should be removed after use. An appropriate lubricant such as CLP, described by MIL-PRF-63460, should be used for preservative and lubrication in accordance with an appropriate weapons manual or lubrication order.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification, and its related QPL (see 6.3.1)
- b. Title, number, and date of all documents referenced (see 2.1).
- c. Quantity of lubricating oil required.

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- d. Conformance tests required (see 6.3.1).
- e. Type and size of container (see 6.9).
- f. Packaging requirements (see 5.1 and 6.9)
- g. Toxicological Data Requirements (see 3.2.3 and 4.2.3 and 6.4).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products that are, at the time of award of contract, qualified for inclusion in Qualified Products List, QPL372, whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from the Qualifying Activity, U.S. Army ARDEC, ATTN: RDAR-QES-E, Picatinny Arsenal, NJ 07806-5000 or by email at [usarmy.picatinny.ardec.list.ardec-stdzn-branch@mail.mil](mailto:usarmy.picatinny.ardec.list.ardec-stdzn-branch@mail.mil). An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <http://quicksearch.dla.mil/>.

6.3.1 Conformance testing. Verification of successful conformance testing in accordance with Table II, along with a one gallon conformance sample should be provided with each production lot delivered. In addition, subsequent deliveries more than 12 months after initial conformance tests were performed should require retesting, and submission of another one gallon sample. Test reports and samples should be sent to U.S. Army ARDEC, ATTN: RDAR-QES-E, Picatinny Arsenal, NJ 07806-5000.

6.3.2 Product formulation disclosure. RBC suppliers should submit to the Qualifying Activity a detailed quantitative description of the product formulation, identifying each constituent material (solvent, base oil, additive etc.) by percentage used in the finished product and the manufacturing source of each component, and the location of the manufacturing facility of the finished product.

6.4 Toxicity clearance. Department of the Army (DA) regulations AR 40-5, Preventive Medicine, AR-70-1, Acquisition Policy, and DA Pamphlet 70-3, Acquisition Procedures, require that all new chemicals and materials being added to the Army supply system have a Toxicity Clearance. This involves a toxicological evaluation of materials to assure the safety of their use. Any toxicity questions should be addressed to: Commander, US Army Public Health Command (USAPHC) (MCHB-TS-T), 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403.

6.5 Chemical agent detector paper. Deleted.

6.6 WC 844 propellant. The source of supply for WC 844 propellant may be obtained upon request from the Qualifying Activity identified in 6.3.

6.9 Containers.

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6.9.1 Container materials. Container material should be of a density sufficient to prevent migration of the product or any constituent materials through the container. Container may require pretreatment to ensure that printed identification will properly adhere and will not be removed by the product. Plastic, Polyethylene, Type I, Class H, Grade 2, Translucent in accordance with L-P-390 is recommended.

6.10 Definitions.

6.10.1 Production lot. An indefinite quantity of a homogeneous mixture of product offered for acceptance in a single, isolated container, or manufactured in a single plant run, through the same processing equipment, with no change in the ingredient materials in a 24 hour time period.

6.11 International standardization agreements. This specification implements NATO STANAG 1135, Interchangeability of Fuels, Lubricants and Associated Products used by the Armed Forces of NATO Nations. When amendment, revision, or cancellation of this specification is proposed the preparing activity should coordinate the action with the U. S. National Point of Contact for the international standardization agreement, as identified in the ASSIST database at <https://assist.dla.mil>.

6.12 Subject term (keyword listing).

corrosion	formulation	humidity	methanol	heptane
copper removal	propellant	residue	water stability	

6.13 Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

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### CONCLUDING MATERIAL

Custodian:

Army - AR  
Navy - AS  
Air Force - 11  
DLA – GS

Preparing activity:

Army - AR  
(Project 6850-2014-002)

Review Activities:

Army - AT, CR, MD, MI, SM  
Navy – MC, OS  
Air Force - 06, 68

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST online database at <https://assist.dla.mil>.